
Remarks

Applicant is addressing the following issues in the same sequence as they appear in the most recent communication from the U.S. Patent and Trademark Office.

35 U.S.C. §112

Applicant has now deleted the claim language "non-degraded" from the pending claim set, and therefore overcomes the currently pending 35 U.S.C. §112 rejections. But in anticipation of any potential future 35 U.S.C. §112 rejections directed to new claims 37, 38 and 39, resulting from their use of the term "not degraded"; applicant presents the below arguments.

ARGUMENT

First, the specification teaches that the inventive process can be used to remove a thermal barrier coating (TBC) that is newly or freshly applied to a subject component. And because the specification teaches that the TBC is newly applied during the manufacturing process, the TBC is therefore understood by a person of ordinary skill in the art to be "not degraded". Second, because the TBC coating on the newly coated component has the same quality as the representative test coupon that is usually for quality purposes, this is further evidence that the subject TBC coating is "not degraded." Third, the specification teaches inventive process embodiments that do not include a step directed to degrading the subject TBC. Again, another teaching generally directed to a coating "not degraded."

In light of the above, Applicant therefore argues that there is support in the specification for the TBC being "not degraded."

CITATIONS

(page 8-9, lines 25-7) Since TBC application can be accomplished as one of the final manufacturing processes utilizing the present invention, the quality and integrity of the TBC applied to the component is ensured and will possess the same quality level and characteristics as the representative test coupon that is normally processed with the component during TBC application. During component manufacture, this process can be used to remove TBC as

required in order to accomplish any modification and/or repair which may be required to produce the component.

(page 7, lines 11-22) The process is carried out using a dry air blast system 1 shown in FIGURE 1 consisting of, but not limited to, an enclosure (not shown), rotary table 2, multiple air jet nozzles 3, a dry air supply pressure vessel and media processing unit 4, a mechanism for air jet nozzle movement 5, a media processing/recovery unit for filtration and spherical particle separation (not shown), and a programmable controller (not shown).

(pages 10-11) [See specification].

LAW

A claim term that is not used or defined in the specification is not indefinite if the meaning of the claim term is discernible. *Bancorp Services, L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1372, 69 USPQ2d 1996, 1999-2000 (Fed. Cir. 2004) (holding that the disputed claim term "surrender value protected investment credits" which was not defined or used in the specification was discernible and hence not indefinite because "the components of the term have well recognized meanings, which allow the reader to infer the meaning of the entire phrase with reasonable confidence").

35 U.S.C. §103

The claimed processes are not obvious in view of the cited publications because in each of the claimed processes, the claimed coating is a "thermal barrier *ceramic* coating"; and neither of the two cited references teach processes that are useful with a thermal barrier *ceramic* coating. Instead, the cited references teach processes that are useful for removing an aluminum-containing coating or a MCrAlY coating (i.e., well-known bond coats)- but NOT a thermal barrier *ceramic* coating.

Furthermore, new claims 37, 38 and 39 (the "not degraded" processes) are also distinct from the cited publications because both of the cited publications teach steps directed to altering or degrading "an aluminum-containing coating" or a "MCrAlY coating" (i.e., bond coats) before a blasting process is subsequently applied to either of them.

US 2003/0148710A1 - Esser

US 2003/0148710A1 teaches that the surface layer that is subject to a blasting process is NOT a thermal barrier ceramic coating, but instead a metallic surface layer. Specifically, US

2003/0148710A1 teaches at [0063] "a metallic surface layer". At [0065] US 2003/0148710A1 teaches that "the surface layer 4 is a so-called MCrAlY coating. In the equation MCrAlY: M stands for a metal of Fe, Co, or Ni; Cr is chromium; Al is aluminum; and Y is yttrium or any rare earth element or a mixture of rare-earth elements."

Please recall that in the "Background of the Invention" section of the pending patent application, a MCrAlY coating is described as a "bond coat" and NOT a "thermal barrier ceramic coating". "Bond coats" are very different than "thermal barrier ceramic coatings." Our patent application teaches that "It is common practice to pre-coat the substrate material with a bond coat. The bond coat accommodates residual stresses that might otherwise develop in the coating system, caused by the metallic substrate and the ceramic thermal barrier coating having different coefficients of thermal expansion, as well as providing oxidation and corrosion resistance. Typical bond codes include, but are not limited to, MCrAlY wherein M is Ni, Co, Fe or mixtures thereof, or a diffusion aluminide or platinum aluminide coating."

Also in the "Background of the Invention" section of the pending patent application, it is taught that the most commonly applied thermal barrier coating material is yttrium stabilized zirconia (YSZ).

Again, US 2003/0148710A1 does NOT teach a thermal barrier *ceramic* coating, US 2003/0148710A1 only teaches a MCrAlY coating. And the currently pending patent application teaches that a MCrAlY coating is a bond coat and NOT a thermal barrier *ceramic* coating.

US 5,976,265 - Sangeeta

At column 2, lines 25-29, US 5,976,265 teaches that, "In one aspect, this invention relates to a method for selectively removing and aluminide-containing coating from the surface of a metal-based substrate." Please appreciate that US 5,976,265 does NOT teach that its method is directed to removing a thermal barrier *ceramic* coating.

The combination of US 2003/0148710A1 and US 5,976,265

Because neither US 2003/0148710A1 nor US 5,976,265 teach processes directed to removing thermal barrier *ceramic* coatings, the combination of these two publications still does not arrive at the claimed subject matter.

"Not degraded"

In addition to the above arguments, it is also our position that new claims 37, 38 and 39 are distinct from the cited publications because both of the cited publications teach steps directed to altering or degrading "an aluminum-containing coating" or a "MCrAlY coating" before a blasting process is subsequently applied to it.

Specifically, US 2003/0148710A1 teaches at [0016] "... The method includes the following steps: cooling at least portions of the layer-system; and stripping at least portions of the metallic layer using a blasting process." And at [0021] "the cooling step is performed by cooling the layer-system in liquid nitrogen." So US 2003/0148710A1 teaches that before being exposed to a blasting process, the subject substrate is first cooled by being dipped in liquid nitrogen. And then only after being cooled by being dipped in liquid nitrogen is the substrate exposed to a blasting process.

US 5,976,265 teaches at column 2, lines 43-52, "The process comprises the following steps: (a) contact in the surface of the substrate with at least one stripping composition to degrade the coating without severely picking the substrate, where the stripping composition is selected from the group consisting of: (i) aliphatic or aromatic sulfonic acids; (ii) a solution of an inorganic acid and an organic solvent; and (iii) sulfuric acid or an aqueous solution of sulfuric acid; ..."

Because the claimed process in new claims 37, 38, and 39 is directed to a "not degraded" thermal barrier ceramic coating and involves no such substrate-altering or substrate-degrading steps, we believe that this is yet another reason why the claimed subject matter is NOT obvious in view of the combination of US 2003/0148710A1 and US 5,976,265.

COMMENTS

The inventor, Gary L. Hanley, has also volunteered the following information that you may find useful because it relates to what is known to a person of ordinary skill in the art.

Regarding United States Patent 6,620,457 / September 16, 2003 / Method for thermal barrier coating and a liner made using said method. The '457 teachings are primarily directed to a process to remove bond coat and thermal barrier coating from cooling holes utilizing a very high pressure fluid system. The '457 teachings also require that the liner cooling holes be present in the liner wall prior to the bond coat application. Bond coat is applied and then removed from the cooling holes using a high pressure fluid system. Thermal barrier coating is then applied and removed from the cooling holes using the same high pressure fluid system.

Although the '457 teachings may be effective in removing bond coat and thermal barrier coating, it could not be used for the intended purpose of manufacturing or repairing a jet engine component with cooling holes, bond coat and thermal barrier coating because the very high fluid pressures required adversely affected the cooling hole required dimensional and airflow characteristics.

Those having ordinary skill in the art of advanced coatings and the manufacture of jet-engine hot-section components understand the above limitations in the art.

In the instant specification, an inventive embodiment is disclosed that utilizes a very low pressure dry system to selectively remove thermal barrier coating deposits from jet engine component air cooling holes. The subject embodiment also allows for bond coat to be applied prior to cooling hole manufacture.

CLOSING

A fee determination sheet is attached for this amendment response. The Commissioner is hereby authorized to charge any additional fee required to effect the filing of this document to Account No. 50-0983.

If the examiner believes that an interview would facilitate a resolution of any and/or all of the outstanding issues pending in this application, then scheduling an interview is cordially invited at the convenience of the examiner.

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Respectfully Submitted,
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